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ABSTRACT

An ongoing research project in Australia is focused on the concept of the transfer of competence across different working situations. It establishes a framework for learning that is student-centered and that integrates the concepts of activity theory, expansive learning, communities of practice, and multiple intelligences. Perceptions of those involved in vocational education and training, especially those involved in work-based learning and situated learning, have and will be used to enhance the model, which provides a matrix for analyzing expansive learning. The matrix combines the five principles of activity system thinking with four fundamental questions about learning. The five principles are activity system as unit of analysis; multi-voicedness; historicity; contradictions; and expansive cycles. The four questions are: who is learning?; why do they learn?; what do they learn?; and how do they learn? Data analysis shows that, for many participants, the multi-voicedness was internal as they slipped between themselves as learners and themselves as facilitators of learning. Thus, two clear systems could be identified, depending on the role the participant was reflecting on, and these systems carried their own historicity and contradictions. Educators should shift their focus away from the provision of information to the facilitation of the learner's ability to unpack and repack, analyze and synthesize, or deconstruct and reconstruct his/her current learnings against existing understandings within multiple frameworks. (YLB)

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Learning for transfer – a theory of situational learning

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ED 456 271

The need for the transfer of competence across workplaces and work communities is a fundamental platform which reverberates through the public policy and rhetoric of vocational education and learning. What is not clear is how this goal is to be achieved. Nor is its inclusion in our practice as educators and researchers either specified or overtly encouraged. Can it therefore be assumed that the transfer of competence is an innate ability? Or do we need to find ways in which to enhance the ability of our workforce to effectively transfer their competence in response to workplace change?

This paper reports on the findings to date from a PhD research project into the transfer of competence across workplace contexts. It establishes a framework for learning which is student centred and which integrates the concepts of activity theory (Engeström 1999), expansive learning (Bateson 1972), communities of practice (Billett 1998) and multiple intelligences (Gardner 1999). It looks at the shift in teaching practice which is essential if learners are to be actively empowered to learn in ways which reduce their conditioned dependency on formal learning tools and ritualised events and develop their capacity for lifelong experiential and investigative learning.

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This paper is a tangible outcome of a research process which started around the concept of the transfer of competence across different working situations. Consideration of transfer gives rise to a host of questions: What is it? How does it occur? Why are some people apparently better at it than others? What motivates people to transfer what they know and can do to new situations? What inhibits the process? What teaching strategies encourage the development of transfer skills? What strategies inhibit transfer? What are the key capabilities needed to initiate and sustain transfer?

The transfer of skills and knowledge across contexts is a fundamental part of the rhetoric of teaching and educational provision. It is a mantra which repeats itself within our educational policy and resource allocations. What, if anything, is the basis for frequent assertions within policy and literature that if our workforce learns ' ... ', then they will become flexible workers able to adapt to workplace changes concomitant with rapid technological development?

Methodology

The aim of my ongoing research is to collect the perceptions of those involved in vocational education and training, especially those involved in work-based learning and situated learning. In an earlier presentation (Down 1999), the raw data collected from 14 in-depth interviews with practitioners was discussed in general terms. Since then, an attempt to systematically analyse this data, using a matrix developed by

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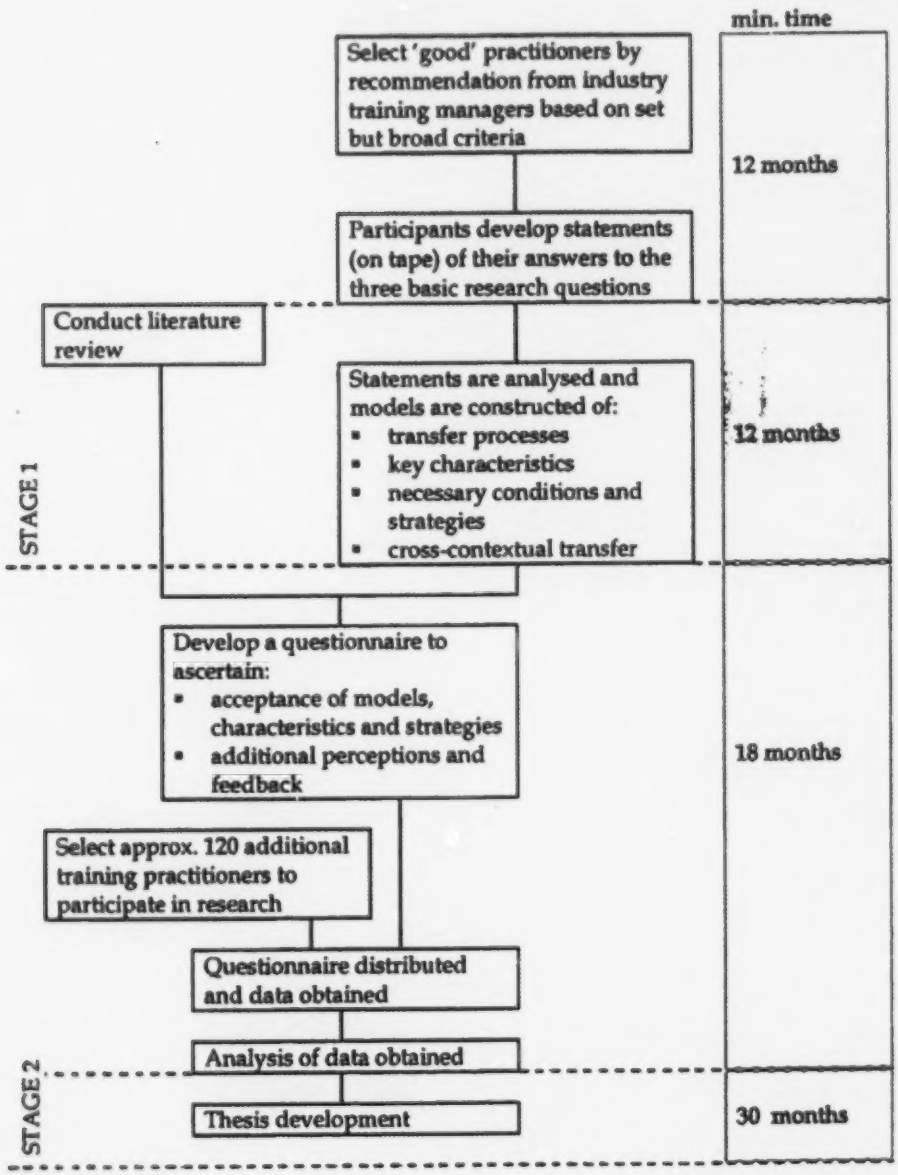
Engeström (1999, p 6), has been made. Arising from this and from an ongoing literature search, a model for describing learning for transfer has been developed.

This model will be used as the basis of an electronic questionnaire which will then be forwarded to at least 120 practitioners for feedback and validation. The responses will provide the data on which an enhanced model will be developed. Figure 1 provides a diagrammatic view of the research design.

Figure 1: Research design


min. time
Select 'good' practitioners by recommendation from industry training managers based on set but broad criteria
12 months
Participants develop statements (on tape) of their answers to the three basic research questions
Conduct literature review
Statements are analysed and models are constructed of:
transfer processes
key characteristics
necessary conditions and strategies
cross-contextual transfer
12 months
STAGE 1
Develop a questionnaire to ascertain:
acceptance of models, characteristics and strategies
additional perceptions and feedback
18 months
Select approx. 120 additional training practitioners to participate in research
Questionnaire distributed and data obtained
Analysis of data obtained
STAGE 2
Thesis development
30 months

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Analysis of data

The conceptual framework within which the stage 1 data has been analysed is based on a matrix for the analysis of expansive learning developed by Engeström (1999, p 6). This matrix is derived from a consideration of learning within the framework of activity theory. Engeström argues that standard theories of learning are based on the proposition that the knowledge or skill to be acquired is itself stable and reasonably well-defined and that there is a competent teacher who knows what is to be learnt. In contrast, learning in the workplace is often concerned with something which is not stable, nor even defined or understood ahead of time. This is the learning involved in personal and organisational transformation and thus, it may be argued, is an essential aspect of learning for transfer.

Expansive learning may be seen to develop from Bateson's (1972) theory of learning. Bateson distinguished between three levels of learning. These are outlined in the following table:

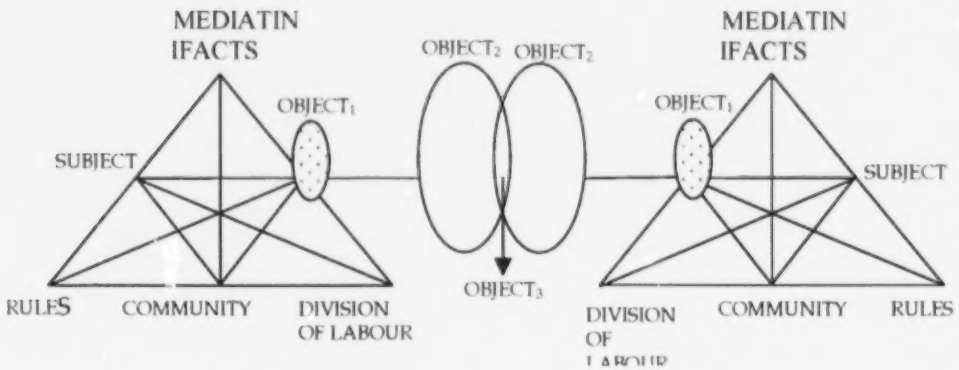
Table 1: Bateson's levels of learning

	Description	Example
level I	conditioning through the acquisition of responses deemed correct within a given context	learning the correct answers and behaviours in a classroom
level II	acquisition of the deep-seated rules and patterns of behaviour characteristic to the context itself	learning the 'hidden curriculum' of what it means to be a student
level III	radical questioning of the sense and meaning of the context and the construction of a wider alternative context	learning leading to change in organisational practices

Expansive learning develops from level III learning and actively and collectively develops new patterns of activity. The matrix developed for the analysis of expansive learning combines the five principles of activity system thinking with four fundamental questions about learning.

The first principle of activity theory is that 'a collective, artifact-mediated and object-oriented activity system ... is taken as the prime unit of analysis' (Engeström 1999, p 4). This is illustrated in Figure 2.

Figure 2: Minimal model for activity theory (Engeström 1999)



This means that the analysis of a system of activity, whether this is a group or individual activity, needs to be analysed within the context of the activity according to an identification of the mediating artefacts, the community of practice in which the group or individual is embedded, the applicable rules and the division of labour involved - as all these will impact on the outcome of the activity.

The second principle is the multi-voicedness of activity systems, which are necessarily a community of multiple-points of view, traditions and interests. The third principle is historicity as activity systems take shape and get transformed over a period of time. Hence, their problems and potentials can only be understood against their own history. The fourth principle is concerned with the central role of contradictions as sources of change and development, whilst the fifth principle asserts that activity systems undergo expansive transformations when the object and motive of the activity 'are reconceptualised to embrace a radically wider horizon of possibilities than in the previous mode of the activity' (Engeström 1999, p 5).

Figure 3 shows the matrix which was used to analyse the stage 1 research data.

Figure 3: Matrix for the analysis of expansive learning (Engeström 1999)

	Activity system as unit of analysis	Multi-voicedness	Historicity	Contradictions	Expansive cycles
Who is learning?					
Why do they learn?					
What do they learn?					
How do they learn?					

Outcomes of the analysis

Whilst time-consuming and difficult, the analysis enabled the recognition of the paradoxes and unresolved contradictions which were apparent in all the interviews. It also enabled the identification of emerging views, as the discipline of working through the concept of transfer and its manifestations gave rise to new insights and understandings.

One of the most intriguing things shown by the analysis is that, for many of the participants, the multi-voicedness was internal as they slipped between themselves as learners and themselves as facilitators of learning. Thus two clear systems could be identified depending on the role the participant was reflecting on, and these systems carried their own historicity and contradictions.

As a result of this, it is intended to re-interview the participants in an attempt to determine whether such factors will give rise to expansive learning about their perceptions of learning for transfer.

A model of learning for transfer

The exercise of analysis through the expansive learning framework allowed me to give form to a model of learning which I believe starts to pull together a number of approaches to learning which are linked within the literature to learning for transfer.

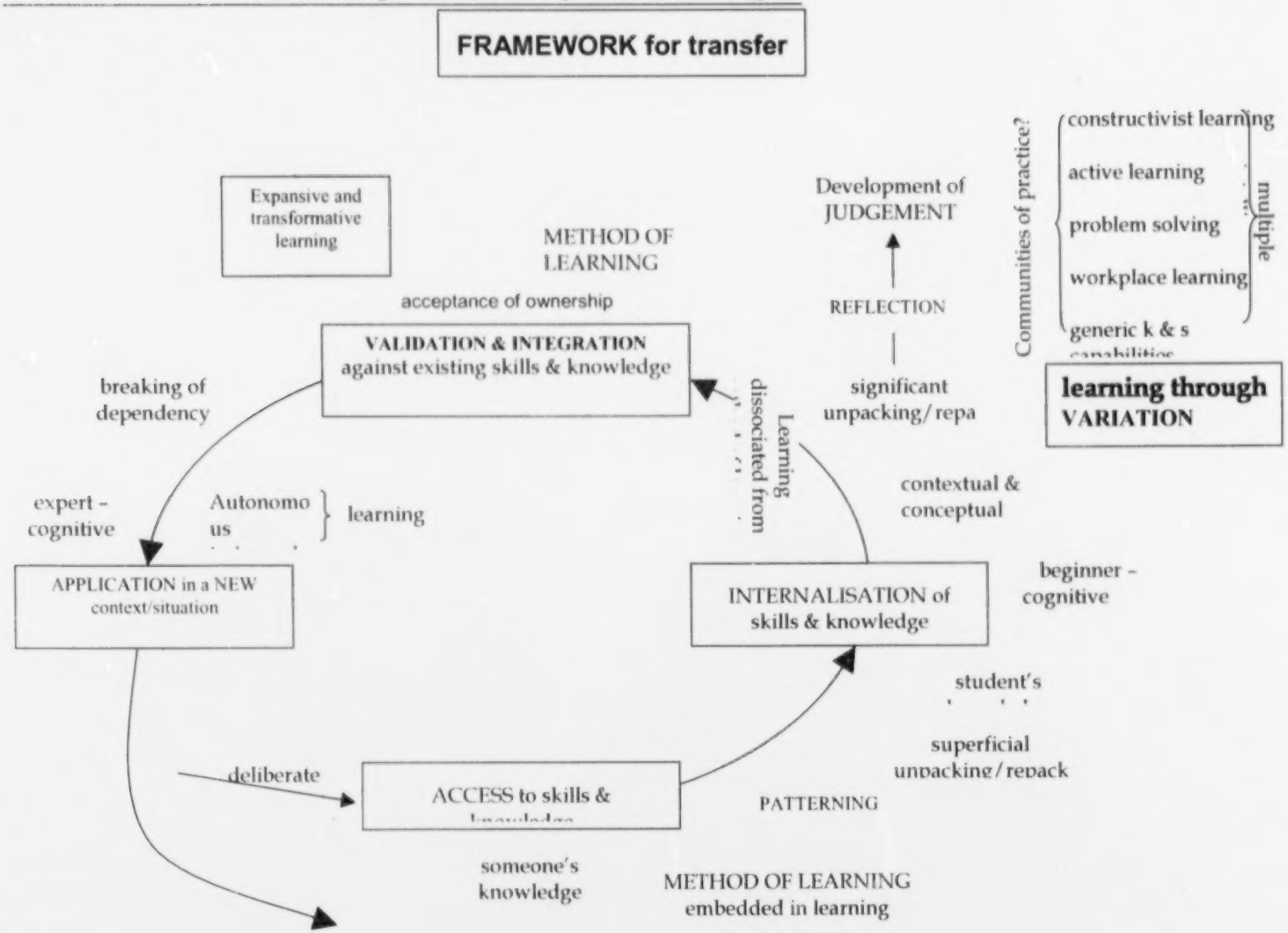
The diagram (shown in two possible configurations) on the following page shows the bare bones of what my thesis is at present – it will no doubt change as I continue my research. The diagram attempts to represent a cross-section through a learning spiral. The argument which underpins this diagram is that, if this is a reasonable depiction of how learning might be considered, then we need to shift our focus away from the provision of information to the facilitation of the learner's ability to unpack and repack, analyse and synthesise, or deconstruct and reconstruct his/her current learnings against existing understandings within multiple frameworks, in a different configuration.

This deconstruction and reconstruction has multiple starting points and results in different configurations of learning. It is not putting the puzzle back again into a known form, it is the creation of new and deeper understandings.

Recent work by Marton and Booth (1997) and Bowden and Marton (1998) presents the theory that it is through the experience of difference, rather than the recognition of similarity, that we learn. Certainly the third step in my learning loop represents learning as a result of the perception and experience of difference. The questioning of this perceived or experienced difference generates 'puzzlement' and transforms it from fuzzy confusion to tangible questions which lead to interest, motivation to learn and the exercise of imagination. It results in the generation and consideration of innovative answers and alternatives.

The rationale for this is that the recognition of similarity (or learning through patterning) limits the depth of the learning as it limits learners' exposure to risk and prevents them from having to leave their learning comfort zone. Much of our conditioned learning during compulsory schooling is characterised by an emphasis on patterning and linear logic. These are both learning tools can could be said to minimise the risk of getting the 'wrong' answer and form the basis for the development of social conformity and adherence to social mores.

In contrast, our informal learning is characterised by a 'trial and error' approach, in which we accept that we will probably make mistakes but that we will learn through these. This is learning in the context of variation and is often characterised by lateral and innovative thinking. Learning through variation necessarily involves the learner in the double loop of problem solving and reflective thinking.


FRAMEWORK for transfer
Expansive and transformative learning
METHOD OF LEARNING
acceptance of ownership
VALIDATION & INTEGRATION against existing skills & knowledge
breaking of dependency
expert - cognitive
Autonomous learning
APPLICATION in a NEW context/situation
deliberate
ACCESS to skills & knowledge
someone's knowledge
PATTERNING
INTERNALISATION of skills & knowledge
student's
superficial unpacking/repack
beginner - cognitive
contextual & conceptual
Learning dissociated from
significant unpacking/repa
REFLECTION
Development of JUDGEMENT
METHOD OF LEARNING embedded in learning
Communities of practice?
constructivist learning
active learning
problem solving
workplace learning
generic k & s
multiple
learning through VARIATION

This also means that what is learned is disembedded (partially or completely) from the method of learning. By contrast, learning through patterning results in learning in which the method of learning and the learning are deeply embedded and not dissociated.

It is also important to recognise that our learning is underpinned by unconscious modifications which result from an individual learner's experience and orientation, the language structure and medium in which the learning is expressed and the contexts and environments (physical, social, intellectual and psychological) in which it occurs.

Learning can be aborted at any point along the loop. My current research suggests that failure to continue learning occurs when it becomes too hard or the risk is too great relative to the learner's motivation to learn. Thus, within the learning process, the learner must have access to or develop strategies to store and organise partial learnings.

The last step in a learning loop is the final breaking of the learner's dependency on the method or environment of learning and signals that the learner is capable of flexible, autonomous and independent transfer of his/her acquired competence. This involves 'letting go' of his/her reliance on the learning props which have been used to initiate, motivate and support learning and includes undue dependence on:

- external motivators
- teachers and mentors
- co-learners and colleagues
- methods and strategies of learning
- 'prods and pokes' which detract from learning independence and autonomy.

The concept of spontaneous transfer[1] (which is implied in the fourth stage of my diagram) is a contested one. A number of researchers, mainly cognitive psychologists, argue that it is a myth, maintaining that there is no empirical evidence that spontaneous transfer does occur (Misko 1998).

I cannot agree with this as my experience (and those of students, colleagues and research participants) is rich with incidents where quite autonomous and independent transfer of competence has occurred. My formative theory on this is that spontaneous transfer arises from an internal sense of 'puzzlement' combined with the need, imagination and initiative to make meaning out of diversity, paradox and multiplicity. This probably entails reflection which reflexively crosses the boundaries between linear and lateral logic; intuition and nous; 'big-picture' and 'fine-detail' thinking; and reasoning both 'within' and 'without' the square.

This probably gives rise to the question of whether it is possible to 'teach' or for something to be 'taught'. Whilst I still, from habit I suspect, use those terms, I am becoming increasingly convinced that you cannot teach anyone anything (or is that a double negative?), nor can you motivate someone to learn. The best that teachers can do is to facilitate an active, inclusive, interesting and challenging environment (physical, social, intellectual and psychological/emotional) in which the learner can

learn and which provides sufficient exposure to variation to cause the learner to question his/her experience, feelings and thoughts.

Conclusions

If this model does help to explain the complexities of learning for transfer, then it implies a radical shift from much of the teaching and learning which currently occurs and is promoted within vocational education and training (VET).

In order to enable educational institutions and enterprises to enthusiastically embrace a VET approach which ensures that their students become independent of them, a radical change from the current government- and training authority-imposed regimes of accountability and audits of activity is required. It requires the courage and commitment to shift current thinking from a product-oriented model based on manufacturing processes to the recognition that teaching is a service activity and one which is only fruitful when teachers and learners work together towards a common goal; a truly Herculean task.

Moreover, cleaning the Augean Stables is child's play compared with the challenge of converting a system, characterised by almost total commitment to learning through patterning and dependency, to the development of transferable learning. However, it is imperative in order to ensure that the Australian workforce can rapidly adapt to technological and work practice change.

Note

1. Basically, spontaneous transfer involves the subject transferring what has been learned in one context to another without prompting towards a recognition of the essential similarity of the two contexts.

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